REMARKS/ARGUMENTS

The Present Invention and the Pending Claims

The present invention pertains to feed rations and human food products comprising corn meal obtained after extraction from whole high oil corn. Claims 1-25 and 73 are currently pending.

Summary of the Office Action

The obviousness-type double patenting rejections in view of copending U.S. Patent Application Nos. 09/927,836 and 10/422,295 have been withdrawn.

Claims 1-6, 8-16, and 19-25 stand rejected under the judicially created doctrine of obviousness-type double patenting, as allegedly obvious over U.S. Patent No. 6,723,370 (Ulrich et al.) in view of Morrison (Feeds and Feeding: A Handbook for the Student and Stockman, 22nd Ed., The Morrison Publishing Co.: Ithaca, NY (1957)).

Claims 1-6, 8-16, and 19-25 stand rejected under 35 U.S.C § 103(a), as allegedly obvious over U.S. Patent No. 6,723,370 in view of Morrison.

Claims 1-25 and 73 stand rejected under 35 U.S.C § 103(a), as allegedly obvious over Watson (Corn Chemistry and Technology, American Association of Cereal Chemists, Inc.: St. Paul, Minnesota (1994)) in view of Morrison.

Reconsideration of the pending claims is respectfully requested.

Discussion of the Double Patenting Rejection

According to the Examiner, the subject matter of claims 1-6, 8-16, and 19-25 is unpatentable over claims 1-6 of Ulrich et al. in view of Morrison. Applicants submit that claims 1-6, 8-16, and 19-25 are not obvious over the claims of the cited patent in view of Morrison for the following reasons.

The pending claims are directed to feed and food products comprising corn meal obtained after the extraction of oil from whole high oil corn, and at least one other nutrient. Ulrich et al. contains claims directed to corn meal remaining after the extraction of oil from whole corn. Corn is used in countless products (see, for example, Attachments A and B, which contain extensive lists of products that use corn). More specifically, corn meal, such as that claimed by Ulrich et al. has myriad uses (see specification at, for example, page 10, line 14, through page 11, line 2). With thousands of possible uses for corn, Applicants maintain that the Examiner has used impermissible hindsight in selecting Morrison as a secondary reference to supplement Ulrich et al. Other references would direct one of ordinary skill in the art to use the corn meal claimed in Ulrich et al. in other ways. There simply is no pointer in the claims of Ulrich et al. to suggest that the extracted corn meal

should be combined with Morrison. The Federal Circuit has emphasized that "the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing [i.e., actual evidence] of the teaching or motivation to combine prior art references." *In re Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2d at 1617. Accordingly, it cannot be said that claims 1-6, 8-16, and 19-25 are obvious in view of claims 1-6 of Ulrich et al. in combination with Morrison, and the obviousness-type double patenting rejection should be withdrawn.

Discussion of the Obviousness Rejections

(A) Ulrich et al. and Morrison

Ulrich et al. is based on an application that is a continuation-in-part of U.S. Application No. 09/927,836, which is a continuation-in-part of U.S. Application 09/637,843 (i.e., the present application). The present application is a continuation-in-part of U.S. Application No. 09/249,280. The present invention relates to a feed ration comprising a corn meal obtained after extraction of oil from whole high oil corn, and at least one other nutrient. The Examiner relies on Ulrich et al. for the disclosure of a corn meal obtained after extraction of whole high oil corn.

The application that resulted in Ulrich et al. derives in part from the instant application. The subject matter pertaining to an extracted corn meal (ECM) appears in both the disclosures of Ulrich et al. and the instant application. Moreover, the disclosure of the ECM in the instant application is entitled to the benefit of the earliest U.S. filing date, which is the filing date of parent application U.S. Application No. 09/249,280, now U.S. Patent No. 6,313,328, which was filed February 11, 1999. Because the disclosure of ECM in Ulrich et al. is the same and claims a similar priority to the instant application, the ECM subject matter in Ulrich et al. also is entitled to the earliest U.S. filing date, which, again, is the filing date of parent application U.S. Application No. 09/249,280, now U.S. Patent No. 6,313,328, which was filed February 11, 1999.

Thus, since both the instant application and Ulrich et al. are entitled to a priority date of February 11, 1999 for disclosure of the ECM, Ulrich et al. cannot be considered to be prior art under Section 102(e) or any other subsection of 102, even though the inventive entity differs between the present application and the Ulrich et al. Applicants have not attempted to remove Ulrich et al. under the 103(c) exclusion because such exclusion is not necessary. Ulrich et al. cannot be considered to be prior art to the present application. As such, the obviousness rejection in view of Ulrich et al., with or without the combination with Morrison, is without merit and should be withdrawn.

(B) Watson and Morrison

According to the Examiner, Watson discloses high oil corn, the concept of using it in animal feed, and various methods of processing it. The use of high oil corn in place of regular corn allegedly would have been obvious to one of ordinary skill in the art. The Examiner further contends that Morrison teaches the use of corn meal and other nutrients in feed and thus, it would have been obvious to combine the disclosures of Watson and Morrison and arrive at the present invention.

Claims 1-25 and 73 of the current application require a feed ration or a human food product comprising a corn meal prepared by extracting the oil from *whole* high oil corn, not just the germ. Claim 1 specifically recites "a feed ration comprising: a corn meal obtained after extraction of oil from *whole* high oil corn, and at least one other nutrient" (emphasis added). Watson discloses high oil corn and describes feeding intact (i.e., the entire kernel) high oil corn to animals (see pages 315-316). Watson neither teaches nor suggests *processing* the high oil corn to remove the oil.

In addition, Watson discloses a process for dry milling U.S. No. 2 yellow corn into meal (see pages 353-355), in which the germ and endosperm are separated, then the germ *only* undergoes extraction to remove the oil, and finally, the extracted germ can be ground to form a feed product. Watson also describes corn wet milling (see page 457), in which the germ *only* is solvent extracted to recover the oil, and the extracted germ is then used in feed products. Because the corn germ and endosperm are purposefully separated, Watson neither teaches nor suggests that *whole* corn be extracted for oil and then ground for meal.

The Examiner states that because Morrison does not describe the corn meal used in the animal feed as a product of the germ only, that the corn meal must come from whole corn. On the contrary, the separation of the germ from the endosperm is standard practice in corn milling (see specification at, for example, page 1, line 9 through page 2, line 4). Thus, if Morrison does not state otherwise, it must be assumed that the corn meal is produced according to the standard method used in the art and, therefore, does *not* come from whole corn.

Therefore, even if, for the sake of argument, the disclosures of Watson and Morrison were combined, one of ordinary skill in the art would still extract oil from the *germ only* of corn, either No. 2 yellow corn or high oil corn, and would not arrive at the present invention. Since the cited references do not teach all of the elements of the pending claims, it cannot be said that claims 1-25 and 73 are obvious in view of these references, and the rejection under 35 U.S.C § 103(a) should be withdrawn.

Information Disclosure Statement

Applicants acknowledge receipt of the initialed PTO-1449 forms for the Fourth Supplementary Information Disclosure Statement, submitted on September 16, 2003. Third Supplemental Information Disclosure Statement was submitted on December 11, 2002, and includes references AI-BH. Applicants hereby request that the Examiner consider references AI-BH and return to Applicants the initialed PTO-1449 form. A copy of the PTO-1449 form that accompanied the Third Supplemental Information Disclosure Statement, as well as a copy of the stamped post card indicating receipt of the Third Supplemental Information Disclosure Statement, are enclosed for the Examiner's convenience.

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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ATTACHMENT A

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Products that use Corn

Adhesives (glues, pastes, mucilages, gums, etc.)
Aluminum
Antibiotics (penicillin)
Asbestos insulation
Aspirin
Automobiles (everything on wheels)

- cylinder heads
- ethanol - fuel & windshield washer fluid
- spark plugs
- synthetic rubber finishes
- tires

Baby food
Batteries, dry cell
Beer
Breakfast cereals
Candies
Canned vegetables
Carbonated beverages
Cheese spreads
Chewing gum
Chocolate products
Coatings on wood, paper & metal
Colour carrier in paper & textile, printing
Frozen foods
Fructose
Fuel ethanol
Gypsum wallboard
Ink for stamping prices in stores
Insecticides
Instant coffee & tea
Insulation, fibreglass
James, jellies and preserves
Ketchup
Latex paint
Leather tanning
Licorice
Livestock feed
Malted products
Margarine
Mayonnaise
Mustard, prepared

Paper board, (corrugating, laminating, cardboard)
Paper manufacturing
Paper plates & Cups
Peanut butter
Pharmaceuticals - The Life Line of The Hospital

Corn chips
Corn meal
Cosmetics
C.M.A. (calcium magnesium acetate)
Crayon and chalk
Degradable plastics
Dessert powders
Dextrose (intravenous solutions, icing sugar)
Disposable diapers
Dyes
Edible oil
Ethyl and butyl alcohol
Explosives - firecrackers
Finished leather
Flour & grits
Potato chips
Rugs, carpets
Salad dressings
Shaving cream & lotions
Shoe polish
Soaps and cleaners
Soft drinks
Starch & glucose (over 40 types)
Syrup
Tacos, tortillas
Textiles
Toothpaste
Wallpaper
Wheat bread
Whiskey
Yogurts

Of 10,000 items in a typical grocery store, how many would you guess would contain corn in one form or another?

Of 10,000 items in a typical grocery store, at least 2,500 items use corn in some form during the production or processing.

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How Corn is Used in Some of these Products

Beer

Beer manufacturing is a process of treating malt to convert and extract the barley starch to fermentable sugars using the amyloytic enzymes present in malt followed by yeast fermentation. However, demand for lighter, less filling beer, especially in the U.S., has permitted use of more refined carbohydrate sources of two types:

a) dry adjuncts, primarily dry milled corn grits, broken rice, refined corn starch, and more recently, dextrose.

b) liquid adjuncts, namely corn syrups.

Cake Mixes

Cake mixes use a pregelatinized corn starch that will form a paste in cold or warm water. In baked goods that use yeast for rising, dextrose is used as a yeast nutrient.

Candies

Corn syrup is used in hard candies to provide a body giving them chewiness and a desirable mouthfeel without excessive sweetness. Candies that are coated use a pyrodextrin corn starch for the coating.

Carbonated Beverages - Coke

High fructose corn syrup (HFCS) blended with sucrose in a 50/50 blend is sweeter than the same concentration of sucrose. The use of HFCS in carbonated beverages is common throughout Canada and the U.S.

Cookies

Corn starch, corn flour or dextrose may be found in cookies.

Corn Flakes

The flaking grits are cooked to a rubbery consistency with syrup, malt, salt and flavouring added. After tempering, the cooked grits are flattened between large steel rolls, followed by toasting in travelling ovens to a golden brown colour.

Corn Starch

Corn starch is derived from the wet milling process and is an important manufactured product. Some uses depend on the properties in the dry state, but most applications relate to its properties as a cooked, hydrated paste.

Corn Meal

Corn meal is a popular dry corn product because of its long shelf life. It is used to produce an assortment of chemically leavened bread and fried products like corn bread and muffins.

Cosmetics

Corncobs, when finely ground, are relatively dust free and very absorbent. This absorbency makes corncobs useful carriers for pesticides, fertilizers, vitamins, hand soaps, cosmetics and animal litters.

Granola Dips/Granola Bars

Some types of Granola Dips use dextrose as a sweetener.

Gypsum Wallboard

Starch-containing corn flour is gelatinized during the manufacturing process; It functions by controlling the rate of water loss during drying of the board. Soluble carbohydrates migrate to the surface and control the rate of crystallization of the gypsum, providing a strong bond between the gypsum and the liner.

Instant Coffee & Tea

Maltodextrins are derived from the wet milling process. They are a dextrose equivalent product of complete solubility but little or no sweetness. Maltodextrins are sprayed on instant tea and coffee to keep the granules free flowing. This solution is also used in instant soup mixes or

other packages where the contents must be be kept free flowing.

Mars Bar & Twix Bar

Many candy bars contain corn syrup.

Paint and Varnish

Tetrahydrofurfuryl alcohol is a resin developed from processing corncobs. These resins are useful in the paint and varnish industry as solvents for dyes, resins, and lacquers.

Paper Products

Paper products use raw starch in the manufacturing process. The properties of high paste viscosity and strong gels are useful in specially coated papers. Pyrodextrins are also used for paper manufacturing for the adhesive property on remoistenable gums for postage stamps and packaging tape.

Pharmaceuticals

Aspirin - an oxidized starch paste, which dries to a clear, adherent, continuous film, is spread in a thin layer over the aspirin.Intravenous - some IVs consist of dextrose and water solutions.

Antibiotics - preferred carbohydrate sources are corn syrup, dextrose, corn starch, lactose and sucrose. Cornsteep liquor was early found to provide a ready source of soluble nitrogenous nutrients plus unknown growth factors that stimulate antibiotic production.

Over 85 different types of antibiotics are produced using corn.

Snack Foods - Corn Chips & Doritos

These snack foods are generally made from whole corn (cornmeal). The high starch content of cornmeal and flour is important in giving a high puff in preparation of extruded (pressed) snack products in which a delicate corn flavour is desired.

Spark Plugs

Starch is used in the production of the porcelain part of spark plugs.

Tire, Rubber

In the production of tires, corn starch is sprinkled on the molds before pouring the rubber, to prevent the rubber from sticking to the molds.

Toothpaste

Sorbitol, which is produced from the corn sugar dextrose, is used in toothpaste as a low-calorie, water-soluble, bulking agent.

Whiskey

The major carbohydrate in the production of whiskey is corn.A typical Canadian whiskey is made from a mixture of about 90% corn, 5% rye, and 5% barley malt.

Yogurt

Some of the different brands of yogurt use corn syrup as a sweetener.

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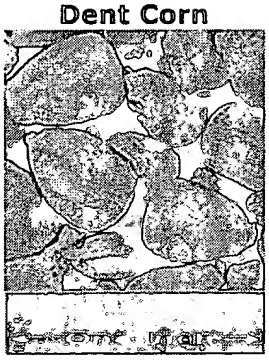
Photograph of corn products (36k)

ATTACHMENT B

Yellow Dent Corn

Yellow Dent Corn



Talk with most any corn farmer and he will most likely argue, should the subject come up, that corn is the most important grain in production today. There is twice as much field corn grown in the US than any other single grain. Aside from eating the kernel itself, corn starch was the first discovered alternate use for field corn. Soon after this, developers learned how to turn corn starch into fructose sugar, the most popular beverage sweetener in North America today which is twice as sweet as regular table sugars. From this humble beginning, literally thousands of other uses for corn have been discovered. This list includes ethanol alcohol, cosmetic and skin care products, drugs, batteries, rubber, beverages, crayons, soaps, absorbent materials for diapers, food additives, biodegradable plastics, food supplements and the list goes on and on. Many believe that corn, more than any other grain during this new century, will be instrumental in feeding the world's ever growing population.

Another name for Yellow Dent Corn is 'field corn.' Field corn is quite a different product than what most North Americans have become accustomed to; sweet corn. Sweet corn, the corn we eat as a vegetable, has a very thin skin. Sweet corn is loaded with sugars which is harvested before the kernels mature. The field corn called yellow dent, has a very thick outer skin that doesn't soften up to the point you can eat it even if you cook it for hours. There's really only two ways to eat it - grind it dry into a meal, or by using a lye, remove the skin and eat it as hominy.

Many years ago Indians soaked their corn for hours in water that had been seeped through wood ashes containing potassium hydroxide. The kernels puffed up which broke the outer shell open. The resulting food had a unique flavor, tasting nothing like corn. Native American cultures have been soaking field corn in wood ash water for centuries to remove the outer husk making the whole kernel - minus the husk - edible without grinding it. This whole hominy was then used in soups and stews, or dried and ground into masa and was then used to make tortillas, tamales or pikki bread. It was also coarsely ground to make hominy grits.

It's fascinating how, knowing nothing about nutrition, natural means have been developed among peoples to get their nutrition from foods. This process of using some type of caustic agent to remove the outer husk of the corn kernel is yet another example. Corn contains enough niacin to prevent it's deficiency disease, pellagra from forming. But it's in an unusable form! However, the lye treatment the natives have been using for centuries to remove the outer skin frees up this niacin so the body can absorb it. It's too bad that Old World descendant Americans living in the Deep South during the 1920s and 1930s didn't learn this simple lesson as so many of them suffered from pellagra during that period of time. Several caustic solutions can be used to remove the husks, turning yellow

dent corn into whole hominy. Commercial enterprises presently use common lye, or sodium hydroxide. Quicklime, which is calcium oxide, or slaked lime, otherwise known as calcium hydroxide or pickling lime also works well for this process and adds the nutrient, calcium to the end product.

Yellow dent corn gets it's name from the inward 'dent' on each side of the kernel and is the primary corn used by the large food manufacturers in making a myriad of products including corn chips, tortillas and taco shells. Yellow dent corn has a relatively soft, inner starchy layer which grinds nicely into a powder. The other variety of field corn, called flint corn, of which popcorn is a close relative, has a very hard starchy interior. Popcorn and flint corn can also be ground into a flour but their hard starch tends to shatter rather than mush into a powder. Because of this, the flint type corns make more of a gritty flour.

The cornmeal you buy in the store is also most likely made from yellow dent corn. However, nutritionally speaking, there's a big difference between the corn meal you can buy in the store and freshly ground corn meal you grind yourself at home. There's a couple of reasons for this. In store-bought corn flour or meal, the outer skin (a great source of fiber) and the germ which is loaded with nutrients has been removed. The grain millers particularly like to remove the germ as it contains the oils that quickly go rancid - something they don't want to happen before you get their cornmeal home and used. Unfortunately, it also contains many of the vitamins and minerals that make corn so healthy. And just like white wheat flour, because they have taken so many nutrients out during the milling process, they'll chuck some cheap, un-chelated minerals back in to make it look like the customer is buying a healthy product.

Corn has sometimes gotten a bad rap as not being a very nutritious food. Like the majority of the other cereal grains, corn is low in lysine. And it's marginally low in Isoleucine and the amino acid combination Methionine and Cystine as well. However, if you add just 50 grams of soybeans to 100 grams of yellow dent corn (dry weight) it more than rounds out an adult male's one day requirement for the essential amino acids. For the weight conscious among us, this works out to only 565 calories. Not bad! Corn also contains goodly quantities of many B vitamins and the minerals Phosphorus, Magnesium, Iron, Zinc and the essential Linoleic Acid. Corn's 72% starch content makes it a high energy food. Corn contains adequate amounts of vitamin A, the highest of any cereal grain. It goes almost without mention that corn and legumes (two complementary foods that combine to make a complete protein) have been staple foods for the peoples in Central and South America for centuries and continues to be so to this day.

Corn has been grown by the original peoples on North and South America for 7,000 years. Christopher Columbus brought corn home to Spain. The Pilgrims were preserved by corn the Indians gave them and corn from that time has traveled with us into modern history.

We feel freshly ground corn meal, ground yourself just before baking, produces great results both in flavor and nutrition. Until you've tried freshly ground corn, it will be hard for you to believe there can be such a big difference in flavor. A lot of that extra flavor comes from the parts of the kernel that's not removed when you mill it. Added to this, the air has little chance to oxidize the nutrients in it's whole corn form. When you grind it the same day you bake or cook with it, there's no time for this

natural aging process to make your cornmeal stale, unlike what happens as it sits in the grocery store. Whole corn can be coarsely ground to make grits or finely ground to make cornbread, tortillas or chips.

We feel as you learn how to use corn, you'll come to appreciate this versatile grain for the unique food it is - a staple grain, that with squash and beans has kept the early native Americans alive for centuries.

Cornmeal Recipes

- http://sitelevel.whatuseek.com/query.go?slice_title=CooksRecipes.com&query=cornmeal&B1=Find+Recipe&crid=03367dc4115e2001
- http://www.cgsnonline.com/cornmeal2.htm
- http://www.godsbanquet.com/recipes/grain.htm
- Hominy recipes: http://www.eaglesnest.net/hominy/recipes.htm

References:

- The Prudent Pantry by Alan T. Hagan
- http://www.voicenet.com/~tjohn/grains.html
- http://agguide.agronomy.psu.edu/sect4/sec41a.htm#Yellow%20dent%20corn
- http://www.godsbanquet.com/recipes/grain.htm
- http://www.ndcorn.com/link.cfm?url=http://www.ilcorn.org/Pages/edu.htm
- http://dbdec.nrc.state.ne.us/cornstalk/abo/cornprod.html

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